



**UNIVERSITY  
OF UDINE**

hic sunt futura

POLYTECHNIC DEPARTMENT  
OF ENGINEERING AND ARCHITECTURE

MATHEMATICS, COMPUTER SCIENCES  
AND PHYSICS DEPARTMENT



**CONTACTS**

University of Udine, via Palladio 8, I 33100 Udine (UD)

[www.uniud.it](http://www.uniud.it)

[www.uniud.it/it/international-area/china-4e2d56fd](http://www.uniud.it/it/international-area/china-4e2d56fd)

**STUDENTS SERVICES AREA**

via Gemona 92, I 33100 Udine (UD)

**COURSES**

[www.uniud.it/didattica/offerta](http://www.uniud.it/didattica/offerta)



weibo

**UNIVERSITY  
OF UDINE  
ITALY**

**Particle  
physics**

Summer School





Palazzo Florio, University of Udine  
Headquarters (foto Archivio Uniud)

## Why Uniud

The University of Udine (UNIUD) is a student-friendly institution. Since its foundation in 1978, UNIUD is a young and dynamic university that promotes higher education, research, technology transfer, internationalization and a strong relationship with the territory, to develop knowledge, experiences and innovative projects.

The key of its success both at national and international level is the quality and enthusiasm of all its members: students, professors and staff.

The attention devoted to its students it's a high and real added value.



**6**  
campus  
in Udine

**176**  
Research  
Fellows

**33**  
Master  
Degree Courses

**314**  
laboratories

**645**  
Professors and  
researchers

**4**  
five or  
six-year  
degree  
courses

**7**  
libraries

**533**  
Administrative  
staff

**12**  
study courses  
with  
international  
mobility to  
achieve a  
double degree

**164**  
classrooms

**36**  
Bachelor  
Degree Courses

**257**  
PhD students

**15**  
PhD  
courses

**15.397**  
students

**22**  
schools of  
specialization



Degree Day Unitud



Florio University Library, One of the Most Precious Cultural and Historical Heritages in the Region





## Learning at The Heart of Europe

Udine has less than 100.000 inhabitants, and it is located in Friuli-Venezia-Giulia, in the North-East part of Italy. It is the entry point of the new Silk Road project “One Belt One Road”, in the very heart of Europe.

Udine is just one-hour driving from Slovenia and Austria, and at the same distance from Venice, the city of Marco Polo.

Living in Udine is pleasant. It is easy to move around, walking or even biking, thanks to the bike sharing service offered by the Municipality. Udine’s air quality is excellent thanks to its 246 green areas and the constant effort to reduce CO2 emission.

The synergy between public and private video surveillance systems makes our city always safe and guarded, as official data on crime rate can confirm. In Udine people can safely walk alone even at night.

Udine is not a hectic town, however it offers many opportunities to start new relationships, thanks to its pubs, cafeterias, bars, theatres, cinemas, fitness centers, restaurants and pizza places.

The city has a calendar always rich of cultural events, such as concerts and international cinema festivals. An example is the Far East Film Festival, which takes place in April. In September you can’t miss the famous Friuli DOC Feast, which allows you to plunge in the local food and wine tradition.

Udine is just few kilometres away from Aquileia, Cividale del Friuli, San Daniele and the city of Palmanova, all of them rich of medieval and even roman traces of an ancient, shining past.





## What They Say About Us. Chinese Students In Udine

### Ying HAO

Udine is a city that is close to the Alps, in wonderful surroundings and fertile lands, with fine vineyards, which are well-known all around the World. Initially, it was an agency in China, which advised me to study in Udine, because it is a people-friendly city, where it is possible to focus completely on your studies, and to live a peaceful but interesting life. As long as University professors and teachers are concerned, they all are very competent, both from an academic and an educational point of view, even though sometimes they might be demanding. I have met a lot of new people: Italian students, local people and Chinese people. Finally, I would like to use this opportunity to thank all those people who warmly welcomed and helped me.

### Xiaoting YUAN

Do I stay in China or do I go to Italy? After finishing high school, my head was filled with this doubt. My parents found on the newspapers that the Nanchino University collaborated with many Italian universities, by means of a project that offers to students with a high school diploma, the opportunity to study in Italian universities. Therefore, I chose Udine to be the start of my new life abroad, where I would study and live completely on my own. I chose the University of Udine because I love Italian language and because its Department of Language and Foreign Literatures is the best one in Italy. Besides, in Udine there are not many Chinese people and this means that I could immerse myself in an environment, that would be 100% purely Italian. I have been talking with Italian people, I have been studying with Italian people, I have been eating with Italian people. My 4-years-long study experience in Udine was truly unforgettable. Udine is a peaceful city, but at the same time it is multifunctional, and this is why I confirm, as student, that this city is both suitable for study and lively!

### Jiayuan CHEN

The main reason why I decided to study in Udine was because here I could fully focus on my studies, as Udine is a quiet and welcoming city. This experience was extremely pleasant because the University offers accommodation and canteen services, and this means that I did not have to care for them only on my own. Despite the fact that Udine is not a very big city, you can find everything that you might need in your everyday life right here. From Udine it is very easy to go to other fascinating cities like, for example, Venice or Trieste. Also, in Udine there are always entertainment, cultural events, and international activities. Initially, Chinese students may have difficulties in understanding lessons, because of our cultural and linguistic differences. But I found extremely helpful CLAV's language class, where I could learn other foreign languages as well. After studying for 3 years, I have learnt a big deal about Italian language and culture. Now Udine is like a second home to me.



Tandem linguistic learning



One of the university gardens





Uniid Library



One of the Uniid Summer Schools

## Uniid Summer Schools

11

Summer Schools are intensive courses offering specific and advanced knowledge on several disciplines. They are based on a multidisciplinary approach and include additional activities, such as visit tours, workshops, and workgroups, to support and complement the traditional lectures.

The University of Udine organizes its Summer School classes in Palazzo Di Toppo Wassermann, one of its most beautiful headquarters.

UNIUD collaborates with Fondazione Monserrate Onlus, a Centre of scientific and cultural excellence which has a stable cooperation with governmental and non-governmental entities for the implementation of projects to foster the exchange of knowledge among countries and people. In China, Monserrate has developed and implemented the "ITALIAN EXCELLENCE PROGRAM", to promote the highest level of scientific exchange between Italian and Chinese universities and centers of research, and between experts. UNIUD is among the Italian Universities that joined the PROGRAM, and is therefore sharing with the best Chinese Universities, its academic excellences.

## Accomodation

UNIUD collaborates with the Educandato Uccellis to offer hospitality, accommodation and food.

The Educandato Uccellis is located in the city center and offers modern bedrooms, equipped with air conditioning and Wi-Fi connection, full restaurant service and studying rooms.

**PARTICLE  
PHYSICS  
SUMMER  
SCHOOL**

**IN CHINA****DURATION**

2 days: 16 hours in the university

**PERIOD**

Before the departure, as agreed with the Chinese University

**ACTIVITIES**

In the Chinese University: lectures, workshops, laboratories on web taught by professors of Fondazione Monserrate in cooperation with Monserrate center of research and development

**TOPICS**

Studying and investigating Western Science History & breakthroughs. Science and Technology in Western countries from 600 B.C. till today, how science changed culture, life and society. Italy as the heart of science and technology, past and present. Studying Physics in Italy today. Introduction to the summer school's contents, overall introduction to Italian scientific Excellences in the area and historical, cultural and geographical basic knowledge about Italy and living in Italy

**IN ITALY****DURATION**

20 days total hours

**PERIOD**

8 – 26 July 2019

**ACTIVITIES**

From Monday to Friday for 3 weeks (5 hours/day lectures, workshops, 2 experimental laboratories on quantum mechanics), 1 visit to an interesting research infrastructure with eminent professors in the field.

**LANGUAGE**

English

**FOCUS**

Leptons, quarks, Higgs Boson, CERN, LHC, Feynman Diagrams, accelerators, research method.

**CREDITS**

Every participant will receive a certificate issued by the university. The certificate will indicate the number of hours (pre-arrival preparation in China, lessons, didactic field trips, lectures, seminars, etc.) and the number of ECTS gained for the Summer School. ECTS credits could be converted into Chinese credits by the home university.

**NUMBER OF PARTICIPANTS**

Max. 30 students will be accepted. The course will be held with a minimum of 20 enrolled students.

**FEES**

A tuition fee of € 3.500,00 will be charged for the 2 weeks. This includes: academic courses, workshops and seminars, field trips, week-end trips, accommodation and meals, daily tutor assistance in workshops and in everyday life. In particular, tuition fee include:

**Didactic Activities**

- Pre arrival students training and orientation with Chinese Language Tutors, Didactic coordination of the program, lectures, laboratories
- Didactic tutoring
- Didactic Materials in English
- 3 Field trips and other visits organized in some of the most beautiful and historical important sites in Friuli Venezia Giulia Region

**Stay in Udine and Friuli Venezia Giulia Region**

- Full day practical assistance with tutors which will help students in their daily life and orientation in Udine
- Accommodation and stay in Udine in double rooms equipped with Wi-Fi and Air Conditioning, towels and sheets. The service provides also Breakfast, Lunch and Dinner Service consisting of three dishes and beverage
- Travels and other visits
- Visit and knowledge of Udine and its territory with a guide

**General services**

- Organization and general activities
- Pick-up and drop-off from and to Venice Airport
- Welcome Kit
- Welcome Touristic and practical guide
- Touristic Visit of Udine
- Welcome and Farewell Dinner
- Visit of other interesting sites in Friuli Venezia Giulia Region
- Visit of Venice
- Tutoring system also during the weekend, if required by students

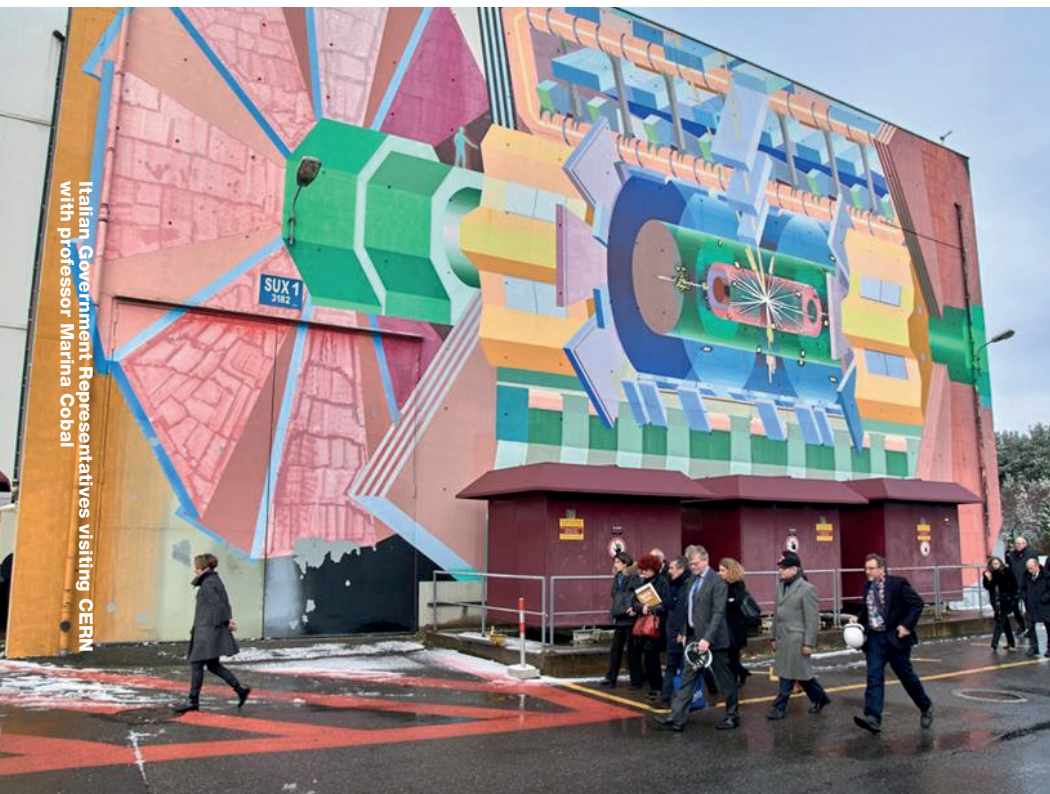
The quote does not include:

- Visa and flight tickets
- Personal expenses
- Other costs not mentioned above

**MORE INFORMATION**

[www.uniud.it/international](http://www.uniud.it/international)





Italian Government Representatives visiting CERN  
with professor Marina Cobal

## GENERAL PROGRAM

How has the universe evolved since the Big Bang? What is dark matter? How is dark matter made up of fundamental constituents? These are the questions Particle Physics tries to answer. Particle Physics is a branch of physics which enormously improved our understanding of Nature in the last century, for it formulated new theories and it started new discoveries, from e.g. anti-matter to the more recent Higgs Boson, reforming the way we look at the universe. Along the way, it had significant impacts on other fields of science, it improved the quality of daily life for people around the world and it trained a new generation of scientists and computing professionals.

Studying Particle Physics gives the opportunity to join the cutting-edge research and to contribute to international research projects which are built to answer to the most fundamental questions about Nature. Besides the Academic career, High Energy Particle Physics in connection with Physics of modern accelerators naturally trains students in information technology, in particular concerning skills in big data and global computing resources management and engineering. Last but not least, many of the technologies (accelerators and detectors) developed and used in particle physics research have been, and still are, inherited by several other area, like for example Medicine, which can therefore be an additional final working destination for those who have dedicated themselves to this discipline.

## SYLLABUS

- Introduction: Particle Physics
- Review of Relativity
- Review of Matter-Radiation Interactions (if needed)
- Particle detectors
- Cosmic rays: the origin of the Standard Model particle physics
- Standard Model
- Leptons
- Quarks
- Symmetries and Quantum numbers
- Feynman Diagrams
- Electromagnetic interaction
- Weak interaction
- Strong interaction
- Higgs boson: the last discovery (+ computing lab, 2h)
- Accelerators: from cosmic rays to hadronic collisions
- CERN and LHC
- Open problems of the Standard Model
- The dark matter case
- Beyond the Standard Model: the future of particle physics
- Quantum mechanics



## VISITS TO PLACES OF INTEREST

### Synchrotron

#### (Trieste, destination of One Belt, One Road):

a multidisciplinary international research center of excellence specialized in generating high quality synchrotron and free-electron laser light and applying it in materials and life sciences.

The visit will be organized by Dr. Loredana Casalis from Elettra Sincrotrone, Trieste ([www.elettra.eu](http://www.elettra.eu)).

## SUMMER SCHOOL DIRECTOR

### Professor Marina Cobal

She is the Italian coordinator of the ATLAS experiment at the LHC proton-proton accelerator, hosted by the CERN laboratory in Geneva. The Italian collaboration consists of 14 universities and research institutes, and about 300 scientists. The ATLAS collaboration is part of the Chinese IHEP-NJU-THU clusters (formed by: Beijing IHEP, Nanjing University, and Tsinghua University) and USTC-SDU-SJTU (formed by Hefei USTC, Shandong University, Shanghai Jiao Tong University and TD Lee Institute (Shanghai)).

Marina Cobal also coordinates the ATLAS Udine group, which counts 12 researchers. The ATLAS Udine group participates to the maintenance of the tracker (pixel detector, the innermost part of the ATLAS experiment, closest to the collision point) and the design of this detector's upgrades.

The Udine group is also working on the analysis of the LHC data, having built a worldwide-recognized expertise on processes top quark and new physics.



Synchrotron, Trieste



Professor Marina Cobal welcomes the Italian Minister of Education and Research, Valeria Fedeli, at the CERN of Geneva (Switzerland)



**NOT ONLY  
STUDY...**

A SHORT GUIDE  
TO SOME OF THE  
ITALIAN AND UDINE  
AMENITIES YOU  
WILL FIND IN ITALY

# UDINE

## UDINE IN BRIEF

Udine is a beautiful town in the region of Friuli-Venezia Giulia, in the North-East part of Italy, located in the very heart of Europe.

It has a student-friendly atmosphere and it is within easy reach of many important places in Italy (Venice is only 140 kilometers away), in Europe and beyond.

Udine is a town filled with squares of Venetian charm and ancient buildings: from *Piazza Libertà*, defined as “the most beautiful Venetian square on the mainland”, to *Piazza Matteotti* (or Herbal Square) which seems to be an open-air lounge, for its all surrounded by porticos; here you can observe the slideshow of ancient and colorful historical buildings which convey the true spirit of Udine.

On the town’s hill, the city’s castle stands: from there, you can see the whole city, the mountains all around it, to the Adriatic Sea, in the South.

In the eighteenth century, Udine was the city of *Giambattista Tiepolo* who reached his prime right here. Today, his works of art can be admired in the *Gallerie del Tiepolo* (Patriarchal Palace), in the *Duomo* (Cathedral), and in the *Chiesa della Purità* (Church of Purity). Udine is an open-to-innovation city and connects its own image to authentic taverns where one of the most-loved rituals, namely the tasting of a goblet of wine (*tajut*), is celebrated in a very human and cordial atmosphere.

The series of old, brightly colored, portico-lined piazzas, between *Piazza Libertà* and *Piazza Matteotti*, resemble an open-air sitting room, and they convey the very essence of this city.

- Udine has a population of almost 100.000 people
- The spoken languages in Udine are Friulian and Italian
- The town and its nearby area have a Slovenian population of approximately 2000 people
- The University of Udine was founded in 1978 by the Friulian people’s will as part of the reconstruction plan of the region after the terrible earthquake of 1976.



udine, Piazza San Giacomo (foto: Annalisa Zamaro, Grafiche Flaccorda)



Local Traditional Food "The Feast of the Doc", Udine





## CULTURAL LIFE

### Museums

There are lots of museums you can visit in Udine such as the Gallery of Modern Art, the Project Galleries (in *Palazzo Morpurgo*), the Civic Museums and Galleries of History and Art with the *Ciceri* collection, the Archeological Museum, the Gallery of Ancient Art, the Drawings and Stamps Gallery and the Friulian Photography Museum.

### Casa Cavazzini Museum of Modern and Contemporary art via Cavour 14, Udine

Casa Cavazzini is the site of the new *Museo d'Arte Moderna e Contemporanea* located in the heart of Udine's historic city centre. Recent restoration work led to the discovery of secular frescoes dating back to the late fourteenth century. A beautiful sixteenth century Venetian-style water butt and pottery dating back to the early Iron Age are on show in the museum. Since 2012, *Casa Cavazzini* has become a cultural power house, reviving the historical heart of the city.

### Il museo del castello piazzale del castello 1, Udine

Today the ground floor of the Castle is home to two recently opened museums: the *Museo del Risorgimento* and the *Museo Archeologico*. Planned and curated with fine attention to detail, both are equipped with innovative multimedia aids. Extending along the entire length of the main floor, the *Galleria d'Arte Antica* houses valuable works of art, including paintings by Carpaccio, Caravaggio and Tiepolo. There are further collections that may be visited by appointment: the Numismatic Collections, the Galleries of Drawings and Prints, and the Sculpture and Plaster Cast Collections. The Castle also hosts two other important cultural facilities open to the public: the *Biblioteca d'Arte* (art library) and the *Fototeca* (photo library).

### Gallerie del Tiepolo Piazza Patriarcato 1, Udine

The "Museo Diocesano e Gallerie del Tiepolo" (Diocesan Museum and Tiepolo Galleries) has been housed in the *Palazzo Patriarcale* (Patriarch's Palace) in Udine since 1995. The eighteenth century Palazzo that also has roots in the fifteenth century was the residence of the Patriarchs of Aquileia from 1593 to 1751 and today is home to the archbishop. The collection houses around 700 works, including Giambattista Tiepolo's eighteenth century frescoes that decorate the ceiling.



## Piazza Libertà

Within the very same square, you may find an ensemble of architectural wonders of Udine, from the Bollani Arch, designed by the famous architect *Andrea Palladio* in 1556, to the Clock Tower, built by Giovanni da Udine in 1527; from the Lodge and Temple of St. John, built in 1533 by Lombard architect Bernardino from Morcote, to the Column with the Lion of the *Serenissima*, “The Most Serene”, the name by which the Republic of Venice was known (1539). The Piazza Libertà is guarded by two sculptures, *Ercole e Caco* (fondly nicknamed Florean and Venturin by the people of Udine), who stare right into the *Loggia del Lionello*. Wherever you look in *Piazza Libertà*, you will always lay your eye upon an architectural masterpiece, that will make you fall in love with this place.

## Cattedrale di Udine

Piazza Duomo, Udine

Udine Cathedral is the city’s most important and imposing church, located a few steps from the main streets of Udine’s city centre. The Cathedral interior is dominated by Baroque style. Thanks to the magnanimity of the Manin family (whose mausoleums are preserved here) and to the eighteenth-century reform, in fact, the interior architecture was made more gorgeous. The magnificent presbytery and masterpieces by internationally renowned artists stand out.

## Piazza Primo Maggio

Piazza Primo Maggio is located at the foot of the Castello’s hill. Its origins are rather peculiar: a legend says that this square was the result of Attila’s soldiers action, who dug here in order to transport the dirt and build the hill where the Castle today stands, so that Attila from that hill could watch the conquered city of Aquileia burn. Other say that this low area (more likely) was a drainage installation for canals water collection. Here a lake took form, large and deep, connected with the Castle’s pit. It defended the Castle and it was possible to reach the hill only by boat.

Another legend tells the story of a lake monster, who threatened people and eventually would eat them. One day a saint, who was a skilled warrior, walked by and killed the monster. It is said that what the archive of the *Madonna delle Grazie* monastery guards, is one rib of that dangerous beast.



Udine, San Giovanni Lodge (Foto: Luigi Vizzi)



Udine (foto: Guido La Raja)



# VENICE

## VENICE IN BRIEF

Venice, the capital of the Veneto region, has a population of more than 270,000, according to the latest census. It is located in the north-east of Italy on numerous small islands in the Venetian Lagoon. The “City of Bridges”, as it is usually called, stretches along the mouths of the Po and the Piave rivers.

Out of the 270,000 inhabitants, about 62,000 live in the historical center, or city of Venice, about 176,000 live in the mainland or “Terraferma”, behind the lagoon, in locations like Mestre and Marghera, and all others live on islands throughout the lagoon (there are about 100 islands around Venice). Also known as a famous place for sweethearts, lovers, artists and poets, Venice is a magical city, which stretches across numerous small islands. It is often referred to as the city of “gondole”, which are the means of transportation used to cross the numerous canals passing through the city.

In Venice you will find many historical buildings, both with modern interiors and also with the traditional designs which are common all over the city. Gondolas, in fact, are the most famous and romantic means of transportation for experiencing the city. The gondola is the symbol of Venice, which has made it famous all over the world.

## CULTURAL LIFE

Venice is world known for its beauty and charm. The city is basically an open-air museum, wherever you go you are surrounded by arts and building which are typical of the Venetian style. If you want to see the real Venice you need to lose yourself between the so called “Calle”, the name given to the Venetian streets, and experience the beauty of this one-of-a-kind-city. Venice is not famous only for its beauty but also for what it has to offer to tourists such as museum, festivals and events.



Venezia, Canal Grande (foto: Jorge Caneela)



Venice, gondole (foto: Xavier Chrac Soler)



**Museums****Peggy Guggenheim Collection**

The Peggy Guggenheim Collection is a museum placed on the Canal Grande in Venice and it is part of the Solomon R. Guggenheim Foundation. It is considered to be one of the most influential museums for American Modernism and Italian Futurism in art. The collection is principally based on the personal art collection of Peggy Guggenheim, the former wife of artist Max Ernst and other painters, Picasso, Kandinskij, Dalí and Pollock included.

**Venice Biennale**

The Venice Biennale is among the most important and prestigious exhibitions of contemporary art in the World. As it focuses on art there are other events such as events for contemporary dance, architecture, cinema and theatre. The Biennale is so called as it is held biennially, in odd-numbered years.

**Correr Museum**

The museum was originated with the donations from Venetian aristocratic Teodoro Correr. It is currently located in San Marco Square. The exhibition includes paintings, sculptures, furniture and weapons and the works of art of utmost importance are by Bellini and Carpaccio.

**Festivals and Events****Venice Film Festival**

The film festival is part of the Venice Biennale and it takes place in late August or early September on the island of the Lido, Venice, Italy. Screenings take place in the historic Palazzo del Cinema on the Lungomare Marconi and in other venues nearby. Since its inception the Venice Film Festival has grown into one of the most prestigious film festivals in the world. The most coveted award is the Golden Lion, which owes its name to the city symbol, the lion of the San Marco Basilica.

**The Carnival Of Venice**

The Carnival of Venice is one of the most known Carnivals all over the World and it is held annually in the city. The Carnival ends with the Christian celebration of Lent, forty days before Easter, on Shrove Tuesday the day before Ash Wednesday. The tradition of this festival is very antique, the Doge granted a period of amusement and celebration to unload discontent that had accumulated during the year.

The festival is world famous for its elaborate masks. One of the most recognizable is probably the Zanni mask which is a character from the "theatre of the professional" (in Italian "Commedia dell'arte").

Zanni is a servant and has two types of his personality: one is cunning and clever and the other is a fool. Zanni is portrayed as the servant of Pantalone, another famous Venetian mask.